REMARKS

Claims 1-49 are pending in this application. Of those claims, claims 1-17, 19, and 20 have been withdrawn from consideration pursuant to the provisions of 37 C.F.R. §1.142(b). Applicants acknowledge, with appreciation, the Examiner's indication that claim 28 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 18 and 21-49 are now active in this application, of which claims 18 and 21 are independent.

Information Disclosure Statement

The Examiner stated that the IDS filed October 27, 2006, fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent documents. Attached are copies of the PTO-1449 form submitted, and a copy of JP 2003-255169. Applicants respectfully request the Examiner to provide an appropriately initialed copy of the PTO-1449 form indicating consideration of JP 2003-255169.

Claim 21 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Jameson et al. ("Jameson")

In the statement of the rejection, the Examiner admitted that Jameson does not teach expressly an exact range of transmission loss of between 0.28 to 0.32 dB/km at 1310 nm. However, the Examiner asserted that Jameson teaches attenuation below 0.4 dB/km, and thus, it would have been obvious to achieve low transmission ranges. This rejection is respectfully traversed.

Applicants submit that Jameson does not teach an optical fiber including all the limitations recited in claim 21. Specifically, Jameson does not teach, at a minimum, "a transmission loss of 0.28 dB/km to 0.32 dB/km at the wavelength of 1310 nm," recited in the claim. Claim 21 is directed to an optical fiber that may enable an accurate connecting loss measurement in a state that the claimed optical fiber is connected to a standard SMF (single-mode fiber) by even using a uni-directional OTDR (optical time domain reflectometer), and that is compatible with the standard SMF of international standard ITU-T G.652. Specifically, claim 21 recites the transmission loss of 0.28-0.32 dB/km at 1310 nm and the range of the MFD (mode field diameter) having a compatibility with the standard SMF of ITU-T G.652. Although the claimed range of the transmission loss is a value that a Ge-doped standard SMF cannot achieve, the claimed optical fiber can enable an accurate connecting loss measurement in a state that the claimed optical fiber is connected to a standard SMF.

In contrast, it is not clear as to whether Jameson teaches the claimed transmission loss in the claimed range of the MFD because it is difficult for the standard SMF of Jameson to obtain a low transmission loss due to an effect of Rayleigh scattering and so on. Although the Examiner asserted that it would have been obvious to achieve the low transmission ranges because Jameson purportedly teaches attenuation below 0.4 dB/km, there is no factual basis as to whether a transmission loss can be lowered to reach the claimed range of 0.28-0.32 dB/km. Accordingly, Jameson does not teach, and the Examiner did not specifically identified where Jameson teaches, a transmission loss of 0.28-0.32 dB/km at 1310 nm under the claimed mode field diameter of 8.3-9.0 μm at 1310 nm.

Based on the foregoing, Jameson does not disclose or suggest an optical fiber including all the limitations recited in claim 21 within the meaning of 35 U.S.C. §103. Applicants,

therefore, respectfully solicit withdrawal of the rejection of the claim and favorable consideration thereof.

Claim 21-27, 30-37, 40-43, 46, and 49 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Bickham et al. ("Bickham").

In the statement of the rejection, the Examiner asserted that Bickham teaches an optical fiber including all the limitation recited in independent claim 21. This rejection is respectfully traversed.

Applicants submit that Bickham does not teach an optical fiber "mainly comprised of silica glass, comprising a core region extending along a predetermined axis, and a cladding region prepared on an outer periphery of said core region, said fiber having a transmission loss of 0.28 dB/km to 0.32 dB/km at the wavelength of 1310 nm, and a mode field diameter of 8.3 μm to 9.0 μm at the wavelength of 1310 nm," as recited in claim 21.

Beckham relates to a low slope compensation shifted optical fiber. The Examiner, referring to the following description of Beckham, asserted that the reference teaches the claimed subject matter (paragraph [0017]) (emphasis added).

> The attenuation of the optical waveguide fiber at a wavelength of about 1383 nm is preferably less than about 0.6 dB/km, more preferably less than about 0.5 dB/km, even more preferably less than about 0.4 dB/km. In one preferred embodiment, the attenuation at a wavelength of about 1383 nm is not more than about 0.1 dB/km higher than the attenuation at a wavelength of about 1310 nm.

Based on the above, the Examiner asserted, "it would have been obvious to a person of ordinary skill in the art to achieve low transmission ranges" (the third full paragraph on page 5 of the Office Action). However, Beckham's optical filer has a specific structure, and therefore, it is difficult to achieve a low transmission loss in the fiber structure disclosed in the reference.

Accordingly, there is no factual basis in Beckham to support the Examiner's assertion that the transmission loss can be lowered to reach the claimed transmission loss of 0.25 dB/km to 0.32 dB/km at 1310 nm (see, also, the above discussion regarding Jameson).

In contrast, the present claimed optical fiber has a transmission loss falling within the range that the standard SMF cannot achieve. Accordingly, the claimed subject matter is not obvious over Bickham because the reference does not teach the reduction of transmission loss to reach the claimed range. The claimed subject matter is related to an optical fiber which can achieve a low transmission loss and enable an accurate connecting loss measurement in a state that the claimed optical fiber is connected to a standard SMF. Bickham does not teach or suggest the limitations recited in claim 21 and the benefit obtained from the claim.

It is noted that the catalog of SMF-28e (Corning® SMF-28e Optical Fiber™ Product Information, submitted concurrently with the December 14, 2006 response) teaches 0.33dB/km as a typical value of the transmission loss. This value is an approximate value, but is the one near the limit of the transmission loss. It is known in this technical field that the reduction of 0.01dB/km attends with much difficulty. Accordingly, it is apparent that even if the Examiner's assertion that Bickham teaches attenuation in a range around 0.4 dB/km (see the second full paragraph on page 5 of the Office Action) is assumed to be proper, this value does not teach the claimed transmission loss of 0.25 dB/km to 0.32 dB/km.

Based on the foregoing, Applicants submit that Bickham does not teach an optical fiber including all the limitations recited in independent claim 21. Dependent claims 22-27, 30-37, 40-43, 46, and 49 are also patentably distinguishable over Bickham at least because these claims respectively include all the limitations recited in independent claim 21. Applicants, therefore,

respectfully solicit withdrawal of the rejection of the claims 21-27, 30-37, 40-43, 46, and 49 under 35 U.S.C. §103 and favorable consideration thereof.

Claim 18 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Jameson and Nagayama et al. ("Nagayama") with further teachings of Chraplyvy et al. ("Chraplyvy").

In the statement of the rejection, the applied combination of Jameson, Nagayama, and Chraplyvy teaches the claimed subject matter. This rejection is respectfully traversed.

Applicants submit that the applied combination of the references does not teach an optical fiber "mainly comprised of silica glass, comprising a core region extending along a predetermined axis, and a cladding region prepared on an outer periphery of said core region, said fiber having a Rayleigh scattering coefficient of 0.84 dB/km/μm^4 to 0.90 dB/km/μm^4 and a mode field diameter of 8.3 μm to 9.0 μm at the wavelength of 1310 nm," recited in claim 18.

Claim 18 is directed to an optical fiber that enables an accurate connecting loss measurement, in a state that the claimed optical fiber is connected to a standard SMF (single-mode fiber), by even using a uni-directional OTDR, and that is compatible with the standard SMF of international standard ITU-T G.652. Specifically, claim 18 recites the Rayleigh scattering coefficient (A-value) and the MFD (mode field diameter). The claimed A-value is optimized for the accurate connecting loss measurement, and the range of MFD enables the claimed optical fiber to maintain compatibility with the standard SMF of ITU-T G.652. The claimed A-value falls within the range of 0.84 to 0.90 dB/km/μm^4, which cannot be achieved by the standard SMF.

In contrast, Jameson teaches an optical attenuator, and merely shows a SMF as an optical fiber applied to the optical attenuator. Jameson does not teach or suggest the claimed optical fiber.

Nagayama teaches an optical fiber having a lower Rayleigh scattering coefficient A (0.85 dB/km/μm^4). However, Nagayama's MFD is different from the claimed MFD. In consideration of the structural conditions that a core diameter is 10 μm and a relative refractive index difference Δn of core is 0.35%, Nagayama's MFD may be about 9.7 μm. This value is out of the claimed range of 8.3-9.0 μm.

Accordingly, Jameson and Nagayama do not disclose or suggest that the MFD is set at 8.3-9.0 μm and the A-value is set at 0.84-0.90 dB/km/μm^4. Moreover, Applicants submit that Chraplyvy in column 6, lines 61-67 does not teach the claimed subject matter, and does not cure the deficiencies of Jameson and Nagayama.

Based on the foregoing, Jameson, Nagayama, and Chraplyvy, either individually or in combination, do not disclose or suggest an optical fiber including all the limitations recited in claim 18. Applicants, therefore, respectfully solicit withdrawal of the rejection the claim under 35 U.S.C. §103 and favorable consideration thereof.

Claim 29 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Bickham and further in view of Sasaoka et al. ("Sasaoka").

This rejection is respectfully traversed. Claim 29 depends on independent claim 21. Applicants thus incorporate herein the arguments previously advanced in traversing the imposed rejection of claim 21 under 35 U.S.C. §103 for obviousness predicated upon Bickham. The Examiner's additional comments and secondary reference to Sasaoka do not cure the previously

argued deficiencies in Bickham. Applicants, therefore, respectfully solicit withdrawal of the rejection of claim 29 and favorable consideration thereof.

Claims 38, 39, 44, 45, 47, and 48 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Bickham et al and further in view of Kato et al. ("Kato").

This rejection is respectfully traversed. Claims 38, 39, 44, 45, 47, and 48 depend on independent claim 21. Applicants thus incorporate herein the arguments previously advanced in traversing the imposed rejection of claim 21 under 35 U.S.C. §103 for obviousness predicated upon Bickham. The Examiner's additional comments and secondary reference to Kato do not cure the previously argued deficiencies in Bickham. Applicants, therefore, respectfully solicit withdrawal of the rejection of the claims and favorable consideration thereof.

Conclusion

It should, therefore, be apparent that the imposed rejections have been overcome and that all pending claims are in condition for immediate allowance. Favorable consideration is, therefore, respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper,

including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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